

## **What is claimed is:**

**[Claim 1]** An assembly for blowing liquids from a vehicle comprising;

a support plenum **(12)** for distributing air,

a nozzle system **(14)** including a nozzle **(16)** for directing air toward the top of a vehicle,

an air delivery conduit interconnecting said plenum **(12)** and said nozzle system **(14)** for delivering air from said plenum **(12)** to said nozzle system **(14)** while allowing said nozzle system **(14)** to move in an adjustment direction toward and away from said plenum **(12)** between raised and lowered vertical operating positions,

an actuator **(42)** for moving said nozzle system **(14)** between said operating positions whereby said nozzle system **(14)** may be moved up and down to accommodate the changing longitudinal configuration of a vehicle **(18)**,

a rotary drive **(46)** for rotating said nozzle **(16)** about a nozzle axis extending transversely to said adjustment direction and said nozzle **(16)** whereby said nozzle system **(14)** may be rotated about said nozzle axis to efficiently direct air against the contour of the vehicle **(18)**,

a first sensor **(50)** disposed upstream of said nozzle **(16)** for detecting the presence of a vehicle from above and for generating a blower start signal **(50)** and for generating an actuator signal to energize said actuator **(42)** and move said nozzle system **(14)** vertically between said operating positions,

a second sensor **(52)** disposed between said first sensor **(50)** and said nozzle **(16)** for detecting the contour of a vehicle from above,

a third sensor **(56)** for sensing the rear of a vehicle from above, and

a controller **(54)** responsive to said sensors for processing a rotary signal to energize said rotary drive **(46)** for rotating said nozzle **(16)** about a nozzle axis and for processing said blower start signal and said actuator signal.

**[Claim 2]** An assembly as set forth in claim 1 wherein said controller **(54)** includes a timer circuit **(68)** for timing the operational time for the blower in response to said blower start signal.

**[Claim 3]** An assembly as set forth in claim 1 wherein said controller **(54)** includes a processor **(70)** for adjusting the blower operational time in response to the number of vehicles per predetermined time period to optimize the number of blower starts per hour.

**[Claim 4]** An assembly as set forth in claim 1 wherein said controller **(54)** includes a processor **(70)** for providing a second blower start-up signal in response to said second sensor **(52)**.

**[Claim 5]** An assembly as set forth in claim 1 wherein said controller **(54)** includes a processor **(70)** for providing a rotary signal to energize said rotary drive **(46)** for rotating said nozzle **(16)** about a nozzle axis.

**[Claim 6]** An assembly as set forth in claim 1 wherein said controller (54) includes a processor (70) for providing a rotary signal to energize said rotary drive (46) for rotating said nozzle (16) about a nozzle axis in response to sensing the end of a roof of a vehicle.

**[Claim 7]** An assembly as set forth in claim 1 wherein said controller (54) includes a processor (70) for processing said actuator signal to energize said actuator (42) and move said nozzle system (14) vertically down in response to said first sensor 50.

**[Claim 8]** An assembly as set forth in claim 1 wherein said controller (54) includes a processor (70) for processing a second actuator signal to energize said actuator (42) and move said nozzle system (14) vertically up in response to said second sensor 52 sensing a high contour vehicle.

**[Claim 9]** An assembly as set forth in claim 1 wherein said controller (54) includes a processor (70) for processing a second actuator signal to energize said actuator (42) and move said nozzle system (14) vertically down in response to said second sensor (52) sensing the rear end of the roof of the vehicle after a predetermined time delay sufficient for the rear end of the vehicle to reach said nozzle system (14).

**[Claim 10]** An assembly as set forth in claim 7 wherein said controller (54) includes a processor (70) for processing a duplicate actuator signal to energize said actuator (42) and to make sure to move said nozzle system (14) vertically down in response to said third sensor (56) sensing a vehicle roof.

**[Claim 11]** An assembly as set forth in claim 1 including a feedback circuit (72) for signaling said controller (54) in response to said nozzle system (14) reaching said lowered operating position.

**[Claim 12]** An assembly as set forth in claim 1 including a biasing system (40) for automatically retracting said nozzle system (14) toward said raised operating position in response to loss of control by said actuator (42).

**[Claim 13]** An assembly as set forth in claim 1 wherein said controller (54) includes a counter (74) for counting the number of vehicles passing under said nozzle system (14).

**[Claim 14]** An assembly as set forth in claim 1 including a display monitor (76) for displaying information from said controller (54).

**[Claim 15]** An assembly as set forth in claim 1 including a function switch (80) connected to said controller (54) for controlling said controller (54).

**[Claim 16]** An assembly as set forth in claim 1 wherein said first (50) and second (52) and third (56) sensors are horizontally aligned so as to be disposed at the same height above the vehicle.

**[Claim 17]** An assembly for blowing liquids from a vehicle comprising:  
a support plenum (12) for distributing air;

a nozzle system **(14)** including a nozzle **(16)** for directing air toward the top of a vehicle;

an air delivery conduit interconnecting said plenum **(12)** and said nozzle system **(14)** for delivering air from said plenum **(12)** to said nozzle system **(14)** while allowing said nozzle system **(14)** to move in an adjustment direction toward and away from said plenum **(12)** between raised and lowered vertical operating positions; an actuator **(42)** for moving said nozzle system **(14)** between said operating positions whereby said nozzle system **(14)** may be moved up and down to accommodate the changing longitudinal configuration of a vehicle **(18)**;

a rotary drive **(46)** for rotating said nozzle **(16)** about a nozzle axis extending transversely to said adjustment direction and said nozzle **(16)** whereby said nozzle system **(14)** may be rotated about said nozzle axis to efficiently direct air against the contour of the vehicle **(18)**;

a first sensor **(50)** disposed upstream of said nozzle **(16)** for detecting the presence of a vehicle from above and for generating a blower start signal **(50)** and for generating an actuator signal to energize said actuator **(42)**;

a second sensor **(52)** disposed between said first sensor **(50)** and said nozzle **(16)** for detecting the contour of a vehicle from above;

a third sensor **(56)** for sensing the rear of a vehicle from above;

said first **(50)** and second **(52)** and third **(56)** sensors being horizontally aligned so as to be disposed at the same height above the vehicle; and

a controller **(54)** responsive to said sensors **(50, 52, 56)** for generating signals to start said blower and move said nozzle system **(14)** vertically downward in response to said first sensor **(50)** detecting the presence of a vehicle without said second **(52)** and third **(56)** sensors detecting a vehicle, and for generating signals to move said nozzle system **(14)** vertically upward in response to said second sensor **(52)** detecting the presence of a vehicle with a high roof, and for generating signals to rotate said nozzle system **(14)** toward the front of the vehicle in response to said second sensor **(52)** detecting the presence of a vehicle without said second sensor **(52)** detecting a vehicle roof, and for generating signals to move said nozzle system **(14)** vertically downward and to rotate said nozzle system **(14)** toward the rear of the vehicle in response to said second sensor **(52)** detecting the rear end of the vehicle roof, and for generating signals to stop said blower in response to all of said sensors **(50, 52, 56)** detecting the absence of a vehicle.